PERJURY: ESTABLISHING A BETTER UNDERSTANDING OF THE FORGOTTEN CRIME

A Thesis

Presented to the

Faculty of the College of Graduate Studies and Research

Angelo State University

In Partial Fulfillment of the

Requirements for the Degree

MASTER OF SCIENCE

by

STEPHANIE DAYLE CRANK

August 2019

Major: Applied Psychology

PERJURY: ESTABLISHING A BETTER

UNDERSTANDING OF THE FORGOTTEN CRIME

by

STEPHANIE DAYLE CRANK

APPROVED:

Drew A. Curtis, Ph.D.

Kristi Moore, Ph.D.

Teresa Hack, Ph.D.

Veronica Snow, Ph.D.

April 30, 2019

APPROVED:

Dr. Don R. Topliff
Provost, VPAA, and Interim Dean, College of Graduate Studies and Research

DEDICATION

This study is dedicated to my committee members. To Dr. Drew Curtis, who helped make this study possible, who inspired innovative thinking, who pushed me to be better. To Dr. Tay Hack, who worked diligently with me throughout the IRB processes, who provided constructive feedback, who helped improve my writing. To Dr. Kristi Moore, who inspired me to attend Angelo State, who pushed me to conduct this thesis. To Dr. Veronica Snow, who provided support, who helped me think about all aspects of this study.

To my parents, who have continuously provided moral, emotional, and financial support, who always push me to work hard, who always reminded me what is most important. To my sister, who kept me grounded throughout this study, who always reminded me to never give up. And to my friends, who helped answer my questions, who supported me throughout the stress, and who reminded me to take a break when it was needed.

ABSTRACT

Research in the forensic psychology field has primarily focused on eye-witness testimony. Although eye-witness testimony is an important topic to review, it leaves many issues in the legal system, such as perjury, to rely on precedence. Perjury is the willful presentation of false information as truth. Perjury is deception within the legal system, and research indicates that legal personnel, including police officers, detective, and secret service agents, detect deception slightly above chance levels. Little research has been done to determine how often and why perjury occurs. Two studies were conducted to address the rate and incentive of perjury. Study one was an online survey which measured perjury frequencies. Study two was designed to replicate perjury-like behaviors. The results indicated that perjury occurs in 29.9% of the interactions with legal personnel. Individuals who received money as an incentive and individuals who did not were equally likely to engage in perjury behaviors.

Keywords: *perjury, deception, lying, legal, forensic*

TABLE OF CONTENTS **page**

LIST OF TABLES **page**

LIST OF FIGURES **page**

BACKGROUND

Forensic psychology is the study of psychological processes as they apply to the legal system. Although forensic psychology is a growing field, research has primarily focused on eye-witness testimony. Researchers focus their attention on the malleability of memory and how it may affect an individual's testimony in the courtroom (Carpenter & Krendl, 2018; Holst & Pezdek, 1992). Memory is an important topic to study within the field of forensic psychology; however, it should not be the only focus. Anecdotal evidence suggests that individuals often use deception when working with legal personnel, such as police officers, judges, lawyers, and investigators.

Deception, or the act of deceiving, has been defined by many researchers in psychology, linguistics, criminology, and the like. Deception comes from the Latin word decipere, which means catch, ensnare, or cheat (Joshi, 2014). Vrij (2008) proposed that deception is "a successful or unsuccessful attempt, without forewarning, to create in another a belief which the communicator considers to be untrue" (p. 91). Although Vrij's description is the most encompassing, it leaves out an important aspect needed in the law: *mens rea.* The term *mens rea* means the mental or cognitive intention to commit a crime (Samaha, 2014). Levine (2014) took a simpler approach and described deception as "intentionally, knowingly, and/or purposely misleading another person" (p. 379). Therefore, for the purpose of the study, the two definitions are combined, and deception is described as the intentional attempt to cause another to believe something that the communicator knows to be untrue or misleading.

APA Publication Manual

Deception in the criminal justice field is better known as perjury. United States (US) Code 18 Ch 79 § 1621 describes perjury as the crime committed when an individual makes a statement or presents the material as truth when he or she believes it to be false. The law initially indicated that an individual need only to tell a Bald-Face Lie (BFL; McCornack, Morrison, Paik, Wisner, & Zhu, 2014) to be charged with and convicted of perjury. A BLF is, by definition, a lie. For example, a hypothetical suspect Jane Doe is on trial for the murder of her husband, and Jane is guilty. The prosecuting attorney asks, "Did you murder your husband?" If Jane tells the attorney, "No, I did not murder my husband," she is telling a bald-faced lie (BFL) and is engaging in perjury. If she tells the attorney, "Yes, he was cheating on me, so I stabbed and killed him," she is telling a bald-faced truth (BFT). However, if she tells the attorney, "My husband was stabbed to death. Do you think I could do such a thing?" she is telling a literal truth and merely only manipulating the information which would not be engaging in perjury — however, United States v. DeZarn (1998) established the precedent that "in a perjury proceeding a defendant cannot use a "literal truth" defense for an answer to a question with a mistaken premise" (Criminal Law, 1999, p. 1783).

According to the Bureau of Justice Statistics (2014), from October 2011 until September 2012, a total of 1,062 individuals were suspects in the matters of perjury, but only 144 individuals were charged and convicted. The United States Court records (Motivans, 2015) indicate that over 200,000 criminal offenses were filed with the courts in 2014. The records also indicate that only approximately 6% (i.e., 12000 criminal offenses) of the court filings proceeded to a trial leaving the remaining 94% (i.e., 188,000 criminal offenses) as plea deals. Therefore, by dividing the total number of suspected perjuries by the approximated number of filings that proceed to trial (1062/12000), an estimated 8.85% of

trials have suspected perjury. Furthermore, by calculating the total number of convicted perjuries by the approximated number of trials (144/12000), it is evident that an even smaller percentage (1.2%) are charged and convicted of perjury.

Although the Bureau of Justice Statistics provides a significant amount of raw and descriptive data, the bureau relies on police departments and courts to report all activity, which does not always occur. Research in the criminal justice and forensic psychology fields attempt to make up for the lack reporting. Nonetheless, virtually no research attempts to identify the root of the problem: how and why individuals engage in perjury. This study aims to increase the knowledge of perjury occurrences within the US legal system and to better understand the reasons that an individual might engage in perjury.

DECEPTION AND LYING

MOTIVES OF DECEPTION

Research showed there were many motivators, or incentives, for an individual to tell a lie. Paul Ekman (1985) theorized there are eight motives for an individual to lie: be polite, avoid punishment, gain a reward, protect someone, protect oneself, maintain privacy, or just because he or she can. Lies told to make an individual feel better or to be polite were often referred to as white lies. Ekman argued that these types of lies were not necessarily lying because the individual was not attempting to be deceitful.

On occasion, lies were necessary to protect oneself or another, avoid embarrassment, or to maintain privacy. These lies could include pure lies, such as a child lying to a stranger or hospital staff refusing to answer questions about a patient (Ekman, 1985). Van Der Zee, Anderson, and Poppe (2016) conducted a study to establish a better understanding of dishonest behaviors related to embarrassment. They determined people acted more deceitfully after rejection, mainly when consequences for unethical behavior were low. Additionally, participants lied more often when rejected based on personal reasons than on unbiased reasons.

Lies told to gain a reward or avoid punishment, on the other hand, were often more deceitful and could carry an emotional toll, including guilt and shame. Deception research often uses financial rewards, as they were often associated with dishonest behaviors such as fraud (Van Der Zee et al., 2016). Interestingly, however, Van Der Zee and her colleagues found participants still fabricated information or engaged in dishonest behaviors even when the monetary incentive was removed. However, participants felt stronger negative affect

which suggested the reduction in positive emotions drove dishonest behaviors more than monetary gain.

TAXONOMY FOR DECEPTION

DePaulo and her colleagues (1996) expanded on the motives of deception, creating a taxonomy for lies. They established four categories: content, reasons, referent, and type. Content included what an individual chooses to lie about, including feelings, achievements, plans, explanations, and facts. For example, when the hypothetical suspect Jane Doe lied to the attorney saying, "No, I did not kill my husband," the content of the lie included facts. On the other hand, if Jane Doe said, "I love my husband. He made me happy, and I could never hurt him," the content would include feelings, explanations, and facts.

The taxonomy of reasons was for whom an individual chooses to lie. DePaulo and her colleagues (1996) outlined two reasons. The first reason to lie was self-centered, meaning to protect or benefit the deceiver's own self. The second reason to lie was others-oriented, meaning to benefit and protect the individual being deceived. When Jane Doe lied to the attorney, she was engaging in self-centered lying. She attempted to deceive the attorney in order to prevent jail time and a felony charge. An example of an others-oriented lie would be if Jane Doe told the jury her husband was a nice man even though he was abusive. In the scenario, Jane Doe was protecting her husband's image.

Referent refers to what or whom the lie was about (DePaulo et al., 1996). Referents included the liar, the target, another person, or an object/event. When an individual was untruthful about his or her activities, the referent was the liar. For example, if Jane Doe told the attorney she was at the gym when her husband was murdered, she was lying about herself. Therefore, she, the liar, was the referent. When a liar is dishonest about the

individual whom the lie was directed, the referent was the target. For example, if Jane Doe's attorney asked if she believed he was doing his job well when he was not, she may lie by telling him he did his job well. Thus, Jane Doe's lawyer was the target. When Jane Doe lied and stated that her husband was a nice man, the referent was another person – her husband. When Jane Doe lies about knowing who murdered her husband, the referent was an event.

Type of lies included outright lies, exaggerations, and subtle lies (also referred to as literal truths; DePaulo et al., 1996). Outright lies were bald-faced lies. Exaggerations were hyperboles, meaning they were an over-expressive version of the truth. For example, Jane Doe might say "I loved my husband with all my heart." This statement would be an exaggeration because although she did love her husband, she expressed greater love for him than she truly felt. Subtle lies, or literal truths, were a deceptive statement that were not untrue. For example, if Jane Doe stated "someone stabbed my husband several times," she is not telling an untrue statement, but using the word "someone" misdirects the target, making the statement deceptive.

HOW ONE CHOOSES TO LIE

Regardless of the motive or taxonomy, creating and maintaining a lie creates a substantial cognitive load (Eckman, 1985; Vrij, Fisher, Mann, & Leal, 2016; Burgoon & Buller, 2008). Cognitive load, according to the cognitive load theory, relates to the amount of information one's working memory can processes at a given time (Sweller, 1988). Therefore, McCornack and colleagues (2014) theorized that lying was more than telling a bald-faced lie. Instead, truthful information was merely manipulated to be deceptive using maxims. Maxims were a concept in language and speech which allowed the deceiver to present the message in a way that was still inherently truthful while being misleading, resulting in a lower cognitive

load needed for deception (McCornack et al., 2014; Grice, 1989). Additionally, maxims followed the principle of least effort (PLE; Zipf 1949; McCornack et al., 2014). The principle of least effort was an ecological concept which indicated that individuals strive to maximize outcomes while minimizing effort (Zipf, 1949).

McCornack and colleagues (2014) argued that the PLE compels individuals to use the most efficient word choices and limit the number of words. Not only did the minimized language reduce cognitive load, it also shifted the statement to a more ambiguous message. Furthermore, when individuals were misleading, they construct the lie from information already stored in long-term memory, which was activated when the truthful message was retrieved to working-memory. While some lies were well planned out, a deceiver may not be able to predict upcoming questions or responses to their statements. Language research suggested that individuals often begin to respond to a question or statement without fully planning their response (Hovy, 1990) suggesting that an individual may need to make a split decision while constructing the statement to use or continue using deception by leaving out some information and manipulating relevant information or adding false information (McCornack et al., 2014).

The split decision to use deception mid-dialog had roots in the Global Workspace Theory, which suggested that consciousness was not a steady and unbroken stream of focal attention (Baars, 1988). Rather, consciousness was a sequence of rapid-fire routines called cognitive cycles. Baars (1988) argued deception was not a singular and discrete message; instead, it was “mirco-burts”, or sudden focused attention, of consciousness which incorporates memory, motivation, and speech production. McCormick and colleagues (2014) posit that Baars’s theory suggested individuals “often decide to deceive before [they] decide

to deceive" (p. 358), meaning the decision to use deception was made before an individual was consciously aware of the decision. While it can be argued that the subconscious decision to use deception was not truly deceptive, the intention to mislead or present false information as truth remains when the individual did not correct their statement to reflect the bald-faced truth.

FREQUENCY OF DECEPTION

Ekman (1985), Levine (2014), and McCornack and peers (2014) all provided theoretical models which indicated that individuals engaged in deception in one way or another. In order to determine the prevalence of lying and deception, Serota and colleagues (2010) conducted three studies on lying behavior. Their first study determined the nature of what individuals lie about and replicated DePaulo and her colleagues (1996) studies on deception frequency. According to DePaulo and colleagues, individuals told a lie once per day on average. However, they reported that the results of their studies did not have external validity, meaning they could not be generalized to the population. Serota, Levine, and Boster (2010) obtained cross-sectional data of a large adult population. One thousand participants ages 18 and older were recruited to participate. To introduce the sensitive topic of lying, they incorporated the survey in with three other topics such as packaged meals, cat litter products, and water softeners.

Following the survey, Serota and colleagues (2010) informed participants that there were many reasons why an individual may lie or deceive. They asked participants to think about their last 24 hours and report on the number of times they lied or deceived others, either face-to-face or through other means. They found that nearly 60% of participants reported that they had not lied in the last 24 hours. Of the participants who reported that they

lied in the last 24 hours, nearly 40% of participants told between one and five lies. Additionally, participants told more lies that were face-to-face rather than through other means, and to their family and friends more than to co-workers and strangers. Nonetheless, most lies noted were confessed by a few prolific liars.

In their second study, Serota and colleagues (2010) addressed the significant skew of data observed in the first study. It was clear that both the median and mode of lies per day was zero, given that 60% reported telling no lies over a 24-hour period. To address this phenomenon, Serota and colleagues (2010) collected the raw data from DePaulo and peers' (1996) and George and Robb's (2008) studies. The researchers also included their data from study one, as well as reconstructed results from a study conducted by Feldman, Forrest, and Happ (2002).

The data from DePaulo and colleagues' study revealed that 76 of the 77 participants reported telling one or more lies within a one-week time frame. Four percent of the total lies told were reported by one single individual. Additionally, the results indicated 66.2% of individuals told one to two lies a day, with the highest frequency of lies reported by 9.2% of the sample (DePaulo et al., 1996).

George and Robb (2008) conducted two studies which illustrated similar results as DePaulo and colleagues. George and Robb reported in the first study that of the 25 participants, 24 reported lying at least once during a one-week period. Similarly, many lies reported were told by one individual (10% in this case), and the highest frequency of lies told was reported by a tenth of the sample. In their second study, George and Robb indicated that 23 of the 24 participants reported they had lied at least once over the course of one week.

Furthermore, approximately a tenth of their sample reported telling the highest frequency of lies.

Feldman and colleagues (2002) collected a sample of 121 individuals' lying behaviors over one-day and one-week time frames. The descriptive statistics exhibited, per day, 40.5% of participants confessed to no lies, 19% confessed to one lie, 14.9% confessed to two lies, and the remaining 25.6% confessed to three or more lies. Feldman and colleagues further reported one participant was responsible for just 5.7% of the total number of lies reported. Serota and colleagues (2010) emphasized the continuous trends seen throughout all four research cases, stating the average number of lies per day, regardless of the prolific liars, was reflected in all studies.

BIASES IN FREQUENCY

In their third and final study, Serota and colleagues (2010) addressed the face validity and accuracy of self-reported lying behaviors. To address these issues, the researchers examined the social desirability bias (SDB) and infrequent liar populations. Two-hundred twenty-five students were recruited to participate in the study. The researchers used a paper version of the same questionnaire used in their first study. In this study, however, the survey contained several categories for those who had indicated they had not lied in the last 24 hours. These categories included 24-48 hours, two days to one week, one week to one month, and never. The addition of categorized time frames helped account for the infrequent liars. In order to account for SDB, the survey also contained questions which inquired about the number of times participants believed others had lied to them in the same time frames and what they believed the percentage of adult Americans lied at least once per day.

The results from Serota and colleagues' third study followed the same trend as all previous studies explained. The average number of lies told per day was reported at 2.34 with a standard deviation of 2.94. The few prolific liars in the sample told nearly one-tenth of the total number of lies. Additionally, the SDB check proved significant, meaning that the average number of reported lies closely matched the average number of lies participants believed others told. Furthermore, the participants' mean estimate of how many adults lie at least once per day closely matched the average number of students who reported to have lied at least once per day.

DECEPTION DETECTION

While it was apparent that individuals lie once or twice a day, it was not always easy to determine if an individual was lying to us. Popular psychology articles that were easily accessible to the public (e.g., Psychology Today) assert it was effortless to determine if an individual was telling a lie. In fact, Rosenfeld (2018) outlined eight behavioral cues which indicated if an individual was lying, including tells such as fidgeting, avoiding eye contact, and sweating, all of which are not accurate indicators of deception (Vrij, 2008). One ubiquitous alleged indicator is that the liar avoided eye contact (Vrij & Lochun, 1997) or blinked excessively and covered their mouth and eyes (Brougham, 1992). More recent research suggested a behavioral cue was one's reaction time to questions or statements, which tended to decrease when an individual was attempting to be deceptive (Suchotzki, Verschuere, Van Boackstaele, & Ben-Shakhar, 2017). Other cues included the individual's voice pitch and speech errors such as interuptions, pauses, and unusual detail (Curtis, & Hart, 2015; Sporer & Schwandt, 2006). Furthermore, individuals may have attempted to control their behavior more often, leading to decreased movement in the extremities of the body (Vrij, Akehurst, Soukara, & Bull, 2004).

While it seemed simple enough to distinguish a lie from the truth when focusing on such behavioral cues, research indicated that the ability to detect a lie was only above chance levels (Bond & DePaulo, 2006). Thus, identifying a liar was not as straightforward as being hyperaware of behavioral cues, leaving room for error in investigations and trials. In a meta-analysis, Bond and DePaulo (2006) reviewed the overall ability to determine truth statements from lies, or *truth-lie discrimination*. They reported that the overall estimated mean for truth-lie discrimination was 54%. Their research also suggested that individuals correctly

identified a truthful statement (60%) more accurately than they were able to correctly identify a lie (48%; Bond & DePaulo, 2006).

DECEPTION DETECTION AND THE LAW

Despite extensive training, it was difficult for officers, lawyers, and judges to determine if a suspect or witness was engaging in deception (Ekman & O'Sullivan, 1991; Sooniste, Granhag, & Strömwall, 2017). Ekman and O'Sullivan (1991) compared the difference between trained professionals' – such as police officers and detectives – and the layperson's ability to differentiate between a truthful statement and a lie. Data for this study was gathered via individuals who partook in Ekman's workshop on behavioral cues of deceit. As mentioned in the theoretical basis, Ekman (1985) theorized that individuals who were engaging in deceptive behaviors express non-verbal cues called "leakage." The workshop provided started with a test of one's ability to detect lies. The participants in Ekman's workshop included U.S. Secret Service agents, federal polygraphers, judges, police officers, psychiatrists, special interest groups, and students. The test utilized ten one-minute samples from videotaped interviews. Half of the samples were of college-aged women telling truthful statements about a video they were watching, and the other half were of college-aged women telling lies about a video they were watching.

The workshop participants were shown eight of the ten videos and asked to identify which women were lying and which were telling the truth (Ekman & O'Sullivan, 1991). For the last two videos, participants were asked to indicate if the women were being truthful or deceptive and included why they believed what they chose. After, the participants were asked to rate how they believed they did on the task. Ekman and O'Sullivan found that police officers, polygraphers, judges, psychiatrists, and secret service agents were able to detect a

lie around chance levels, with secret service agents having the highest accuracy rate at 64.12% and polygraphers having the lowest accuracy rate of 55.67%. Additionally, college students had an accuracy rate of 52.82%, although they had the highest variability of scores. Furthermore, they found that age was negatively correlated with the accuracy of lie detection in both the secret service agent group and the federal polygraphers group, meaning the older the agent was, the lower his or her truth-lie discrimination accuracy. According to the Bureau of Labor Statistics, the average age of individuals in the legal field was 43.5. Therefore, perjury detection may might have been lower due to the greater age of personnel.

In another study, researchers addressed the effectiveness of deception detection training. Sooniste and colleagues (2017) recruited Norwegian legal personnel to act as investigators and university students to act as suspects. Half the legal personnel were assigned to the control group, and the other half were provided a training program to identify malicious intentions. Half the university students were instructed to tell the truth about their intentions while the other half were told to be dishonest about their intentions. Sooniste and peers found the overall veracity level was 60.4%, and no different than that of chance levels. Although the overall accuracy level was not significantly different from chance, the trained officers reported using the tactics from the training and payed attention to the cues they learned in the training sessions.

FACTORS OF DECEPTION DETECTION

Moreover, Bond and DePaulo (2006) determined in their research that six factors contributed to the accuracy of truth-lie discrimination: deception medium, motivation, preparation, baseline exposure, interaction, and receiver expertise. First, the deception medium is the platform in which the participants were exposed to the truth and lie statements.

The mediums included video, audio, audiovisual, and in-person. No distinction was made between the difference of a video medium and an audiovisual medium. The authors established participants judged the deception medium of video messages as less truthful than the audiovisual and audio mediums. Bond and DePaulo explained the discrepancy in detection ability could be in part due to Ekman and Friesen's (1969) hypothesis that the body reveals deception cues more than the face (as cited in Bond & DePaulo, 2006). In another study, Hartwig and colleagues (2004) found no significant difference between in-person and video mediums. Legal trials have occurred using both face-to-face and audiovisual mediums. Some departments have utilized video conferencing for criminal trials when the defendant was in prison settings.

Second, motivation was also a determinant in lie-truth discrimination. Bond and DePaulo (2006) argued when the target (i.e., the individual making a truth or lie statement) was given the motivation to make their statements believable, the participants were more likely to have greater truth-lie discrimination. For example, targets who were more motivated to make their lie statement more believable had a greater chance to be perceived as liars. However, their meta-analysis revealed a target with the motivation to make their truth statements more believable does not affect the participant's ability to determine if it was a true statement or a lie statement.

The next factors that contribute to lie-truth discrimination were baseline exposure and preparation. Research indicated that baseline exposure and preparation had a significant impact on an individual's ability to determine a truth statement from a lie (Bond & DePaulo, 2006). When exposed to the target (i.e., the individual giving a truth or lie statement), participants achieved a higher accuracy (55.91%) of truth-lie discrimination compared to

only 52.26% discrimination when not exposed to the target (Bond & DePaulo, 2006). Additionally, if the target was given time to prepare their lie statements, the participants were more likely to label the statement as truth. Nonetheless, there was no significant difference in the participant's frequency of correct truth-lie discrimination if the target was given a chance to prepare their truth statement.

The final two factors which contributed to the accuracy of truth-lie discrimination were expertise and interaction. Expertise and interaction did not have a significant impact on the participant's ability of truth-lie discrimination (Bond & DePaulo, 2006). The authors' meta-analysis determined participants who interacted with the target were no more accurate than participants who observed the target as a third-party. Similarly, their analysis indicated there was no difference in expert versus non-expert ability to accurately identify lie statements. In fact, Bond and DePaulo's analysis favored a higher accuracy for non-experts.

BIASES IN DECEPTION DETECTION

While Bond and DePaulo's (2006) accounted for deception accuracy, it left out an important factor: the truth-default. Levine (2014) proposed a theory on deception and deception detection called the truth-default theory (TDT). Levine's theory was based on the idea that humans assume that others are typically honest; an idea that is similar to "truth-bias." Truth-bias was, by definition, the tendency to assume another individual was telling the truth independent of whether the individual was indeed telling the truth. According to Levine, truth-bias and TDT are different when it came to deception detection. Although truth-bias was cited in several pieces of literature (e.g., Zuckerman, DePaulo, & Rosenthal, 1981; Sooniste, Granhag, & Strömwall, 2017), it was often viewed as an error on the

individual who did not detect the lie because it said the individual was perceived to have a flawed judgment (Levine, 2014).

Contrary to truth-bias, TDT was only a passive assumption the other individual was honest just because it was a cognitive fallback, meaning that an individual had no reason to suspect another of dishonesty. As a result, the individual would not use cognitive resources to observe verbal and non-verbal cues related to dishonesty. This passive assumption, then, did not reflect on the individual having flawed judgment.

ASSUMPTION OF BEHAVIORAL CUES

Although the TDT focused on demeanor and communication context, individuals still turned to the tall tale behavioral cues used to detect a liar. Whether it was due to a simple internet search or extensive training, individuals were more likely to turn to non-verbal cues to detect a deceiver (Vrij & Mann, 2001). Interestingly, when individuals focused on verbal cues alone, individuals were able to detect truths (63%) more than lies (52%) with the overall accuracy for deception detection of 57% (Blair, Levine, & Shaw, 2010). Moreover, Masip and Herrero (2015) found that 86.36% community members and 95.45% of police officers reported believing that liars exhibited behavioral cues whereas only 31.82% laypersons and 40.91% professionals reported believing that liars exhibit nonbehavioral information.

Vrij and Mann (2001) found police officers tended to focus on nonverbal behavioral cues as evidence of deceit, although focusing on behavioral cues alone reduces truth-lie discrimination accuracy. In their study, police officers were asked to identify truth from lies in a murder trial. Participants were asked to view the interrogation video of a recent murder case, complete a questionnaire on how they determined if the suspect was engaging in dishonest behaviors, and identify which clips were of the suspect lying and which were of the

suspect telling the truth. Vrij and Mann found eighteen officers were great at detecting lies (72% or higher) and eleven were below average (30% or lower).

Vrij and Mann explored the questionnaires and compared the differences between officer's truth-lie discrimination accuracies. They found a significant difference between the officers. Those who were poor at detecting lies relied more on non-verbal behavioral cues more than those who were particularly good at detecting deceit. Furthermore, when individuals (both professional and nonprofessional) focused on contextual information, overall veracity accuracy increased from 57% to 75% across eight studies, with the accuracy for detecting lies (78%) higher than the accuracy for detecting truths (75%; Blair, Levine, & Shaw, 2010).

Additionally, researchers found participants were more accurate in truth-lie discrimination when the suspect was wearing a veil (such as a hijab or niqab; Leach et al., 2016). Leach and colleagues noted there was no significant difference in truth-bias between the veiled and unveiled groups, suggesting that truth-bias did not affect truth-lie discrimination. Participants reported relying on verbal cues when judging the veiled suspects, further solidifying the importance of focusing on verbal cues in deception detection.

PROBLEM IDENTIFICATION

A plethora of research has been conducted on deception and deception detection. Although perjury is an act of deception, it is often not studied in deception research. Both deception and perjury are the presentations of information with the intent to deceive another, yet researchers have only focused on the public opinion on perjury. Green and Kugler (2012) recruited participants to complete a survey designed to establish a public opinion. They created four scenarios in which an individual engaged in perjury by a) lying during an investigation to avoid trial, b) making a misleading statement to avoid trial, c) lying during the trial, and d) making a misleading statement during the trial. They found that individuals believed that the scenario involving lying in court was the most criminalizing and should have the highest punishment; whereas, the scenario that involved making a misleading statement during the investigation to avoid trial was the least criminalizing and should have the lowest punishment.

Based on the literature, both deception and perjury are strongly discouraged with the assumption of punishments as consequences (Green & Kugler, 2012; McCormick et al., 2014; Masip & Herrero, 2015). Nevertheless, perjury often goes unnoticed and unpunished. The purpose of Study 1 was to determine how often individuals report to have engaged in perjury and how often individuals are willing to engage in perjury. Three hypotheses were formed for study one:

H1: The percentage of individuals who engage in perjury is higher than the reported percentage of the population as indicated by the Bureau of Justice Statistics.

H2: Individuals who have engaged in perjury are more willing to engage in perjury

for a significant other, family, friends, and themselves.

H3: Individuals are more willing to engage in perjury for a significant other and themselves than for friends or other family.

The purpose of Study 2 was to analyze one incentive to engage in perjury (money) and compare the number of individuals who engage in perjury behaviors to the number of individuals who report a willingness to engage in perjury. Three hypotheses were formed for study 2:

H4: Individuals who are given an incentive will more likely cheat and in turn, lie about cheating, hence engaging in perjury behaviors. Further, individuals who are given an incentive will report a greater difference in the number of problems they got correct.

H5: The number of individuals who report having engaged in perjury (study one) will closely match that of individuals who engage in perjury (study two).

H6: The percentage of individuals who commit perjury (in part two) will be greater than the percentage of individuals who are suspected of and convicted of perjury as reported by the Bureau of Justice Statistics.

METHODOLOGY

STUDY 1

The purpose of study one was to assess the estimated occurrence of perjury behavior in the United States. The Bureau of Justice Statistics estimates that approximately 8.85% of trials are suspected of perjury and 1.2% are tried and convicted. It was hypothesized (H1) that the number of individuals who admit to committed perjury would be significantly higher than the mathematical estimate of individuals who have been charged and convicted in the matters of perjury.

Participants: A total of 167 individuals ages 18-70 (M = 22.97, SD = 8.32; 25.2% men, 72.7% women, and 2.1% other) participated in an anonymous online survey inquiring about perjury behaviors. Twenty-three participants were excluded from the analysis as a result of invalid response for the validity check. Participants education level ranged from High School/GED (13.2%) to Masters (5.6%) with most participants at least having some college education (61.8%) or a Bachelors (13.9%). More than half the participants were White/Caucasian (53.5%) followed by Hispanic/Latino (29.9%). Participation was voluntary and anonymous.

Procedure: Participants were recruited through SONA – the psychology department's participant pool – and two social media websites: Facebook and Reddit. Reddit is an anonymous online forum that contains subreddits, or separate groups, for a multitude of activities and interests. The subreddit s/samplesize was used to post the survey. This subreddit is dedicated to allowing researchers to post their surveys and participate in researchers' studies.

Participants had the opportunity to read and agree to the informed consent (Appendix A). After, participants were redirected to the online survey (Appendix B). The survey consisted of questions designed to measure self-reported perjury behaviors. Given the nature of the questions, participants were reminded frequently that their participation was voluntary and anonymous. Although the survey asked sensitive information regarding the criminal behavior of perjury, no action of the researcher was required to report that a crime has been committed due to its anonymity.

Results: All analyses in this study were conducted using SPSS v.24 with an alpha set to .05. Two-tailed tests of significance were used unless otherwise stated. Of the 144 participants, 48.6% of individuals reported that they were asked to provide information about a crime (including traffic violations) to a law enforcement officer. Individuals reported that they were asked to provide information to legal personnel between 1 and 50 (M = 3.19, SD = 7.25) occurrences. Of those who reported that they provided information regarding a crime (including traffic violations) to a law enforcement officer, 9.9% reported that they provided false information at least once, thus engaging in perjury. A total of 7.6% of participants reported having been called as a witness to a crime, ranging from 1-10 (M = 2.22, SD = 2.95) occurrences. Of those who were called as a witness, 60% reported providing accurate information to the best of their ability. The remaining 40% declined to answer the frequency to which inaccurate information was provided.

A total of 11.1% of individuals indicated that they signed an oath as part of a criminal investigation, ranging from 1-10 (M=2, SD=2.66) times, with 44.4% engaging in perjury and reporting dishonest, inaccurate, or misleading information. One participant chose to explain why he or she chose to engage in dishonest behaviors, stating "*I chose not to divulge*

information. But I didn't lie, I just told the judge I prefer not to answer the question which would incriminate someone else for a different crime than the one currently being investigated." Although one can argue this statement as "pleading the fifth" (a constitutional right to remain silent on the stand), the fifth amendment states "no person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, . . . nor shall be compelled in any criminal case to be a witness against himself" (as cited in Epstein & Walker, 2012, p. 698) meaning that the participant likely could not plead the fifth based on the information provided.

A small percentage of participants (11.1%) reported having presented information they knew to be false as truth to any officer of the law. Some participants chose to explain how they present false information as truth. These explanations ranged from participants lying about speeding or drinking to reporting criminal behavior that did not happen. One individual reported that he or she told an officer, "*my significant other didn't really abuse me*" and that claimed him or herself to be mentally unstable, indicating that perjury can happen for nonviolent crimes (such as traffic violations) to violent crimes (such as battery and domestic violence).

The researcher determined the total number of participants who engaged in perjury across all categories asked in the survey by recording whether or not the participant reported providing inaccurate, untruthful or misleading information on questions 1-6 (see Appendix B). A total of 43 (29.9%) participants engaged in at least one form of perjury (*figure 1*).

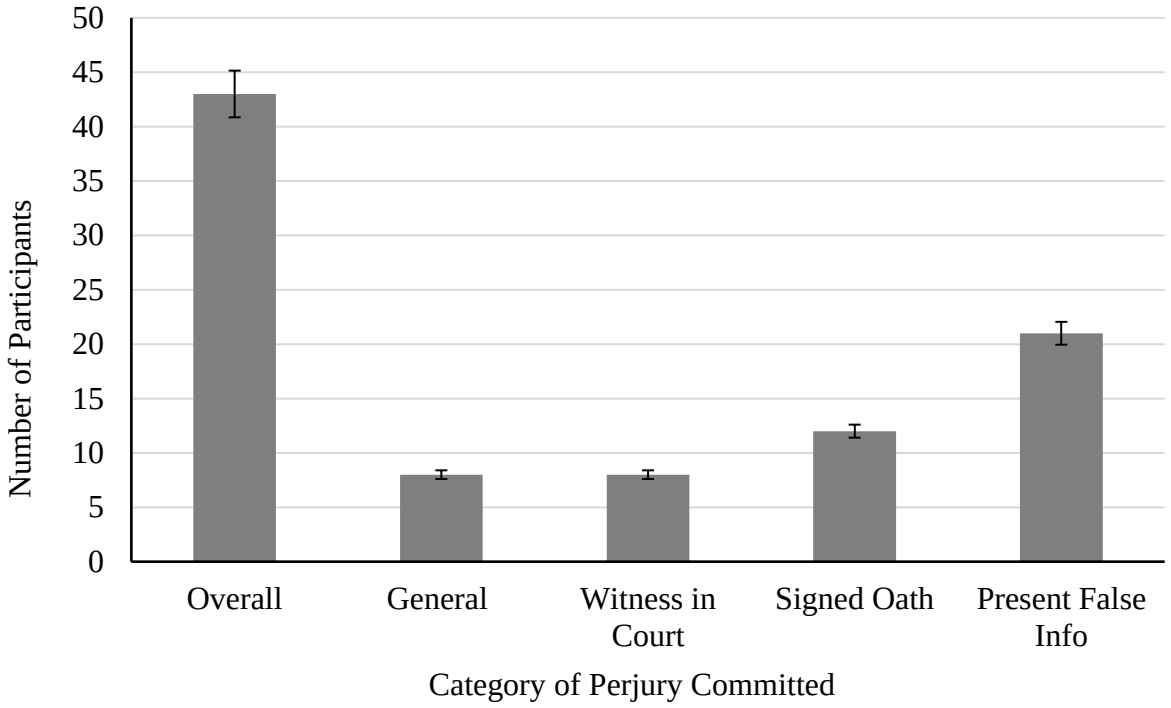


Figure 1. Percentage of committed perjury across categories
*Note. Participants may have engaged in more than one form of perjury

To determine if the percentage of individuals who reported that they engaged in perjury was comparable to the population as provided by the Bureau of Justice Statistics (H1), goodness of fit chi-squares were computed for both percentages of individuals convicted (1.2%) of and suspected (8.85%) of perjury. The chi-squares met satisfied both assumptions. First, the sample size was large enough and zero cells (0.0%) had expected frequencies less than five. Second, the chi squares were not used on correlated data, and the assumption of independence was met. In both cases, there were statistically significant differences between the percentage of individuals who reported that they engaged in perjury and the percentage of the population convicted (χ^2 (1, N = 144) = 997.72, p = .000) and

suspected of perjury ($\chi 2$ (1, N = 144) = 78.81, p = .000; *Table 1*). Thus, perjury occurs at a higher frequently than what is expected based on the Bureau of Justice Statistics.

Table 1
Chi Square Table of Expected Perjury Count

	Suspected Perjury		Convicted Perjury	
Admitted Perjury	Yes	No	Yes	No
Expected	12.7	131.3	1.7	142.3
Observed	43	101	43	101
Chi Square	χ^2	*p*	χ^2	*p*
	78.81	.000	997.72	.000

An independent-sample *t*-test was calculated to determine if a significant difference of willingness to engage in perjury existed between those who reported engaging in at least one form of perjury and those who did not (H2). The data met the assumptions of an independent-sample *t*-test. Data was collected following a continuous interval scale and data was collected using random-sampling. Data showed a relatively normal distribution, and Levene's test for equality of variance was not significant (F = .001, p = .980). There was no statistically significant difference between those who reported perjury behaviors and those who did not, t (141) = .56, p = .574 meaning those who have and have not previously committed perjury were equally willing to engage in perjury for a significant other, friends, family, or oneself in the future.

However, a one-way repeated measures ANOVA indicated statistically significant differences when comparing the reported willingness of engaging in perjury for a significant other, family, friends, and self (H3). Four of the five assumption criteria were met. The dependent variables were measured using a continuous interval scale and the same

participants were present in all groups. There were no significant outliers, and the distribution of the dependent variables were normally distributed. However, the assumption of sphericity was violated, Mauchly's test of sphericity was significant ($p < .000$) and a Huynh-Feldt correction was calculated, $F(2.36, 335.03) = 17.69$, $p < .000$. The Huynh Feldt correction was utilized as the epsilon was greater than 0.75 (.786; Warner, 2013). The partial eta square showed a medium effect size $\eta^2 = .11$. The willingness to commit perjury was significantly higher for family and significant other than for self and friends (*Figure 2).*

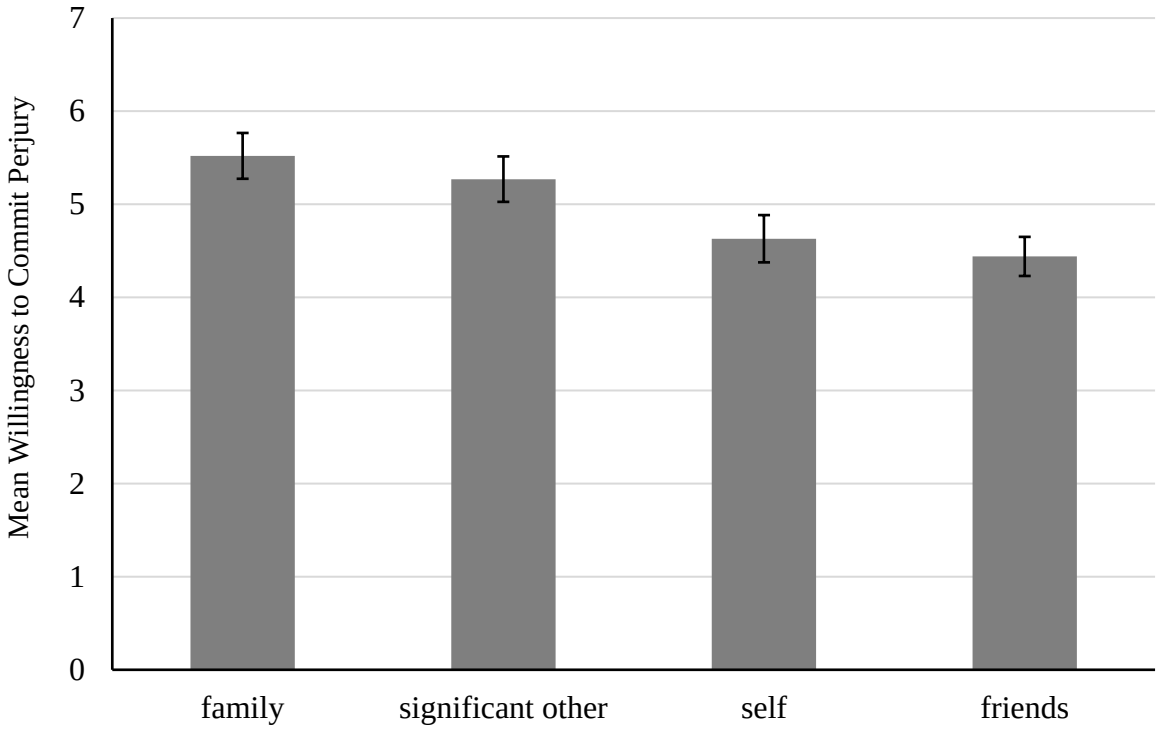


Figure 2. Pairwise comparison of mean willingness to commit perjury across categories.

An exploratory analysis using Pearson's correlation coefficients (*Table 2*) was calculated to determine if there was a relationship between age and the likelihood of

engaging in perjury for a significant other, friends, family, and/or oneself. Approximately a tenth of the sample (11.19%) was over the age of thirty. There were significant correlations between age and the likelihood of engaging in perjury for a significant other, friends, and oneself, all having a relatively small effect size. Age and the likelihood of lying for a significant other were negatively correlated, $r(144) = -.159$, $p = .05$. Age and the likelihood of lying for friends were negatively correlated, $r(144) = -.208$, $p = .012$. Age and the likelihood of lying for oneself were negatively correlated, $r(143) = -.172$, $p = .04$. Age and the overall likelihood of lying were negatively correlated $r(143) = -.211$, $p = .011$. Therefore, the older an individual is, the less willing her or she is to engage in perjury.

Table 2
Means, Standard Deviations, and Correlations for Likelihood of Perjury, n = 152

Variable	Mean	SD	1	2	3	4	5
1. Overall	19.87	10.25					
2. Sig. Other	5.26	2.92	.930**				
3. Friends	4.43	2.50	.894**	.759**			
4. Family	5.52	2.95	.920**	.890**	.771**		
5. Self	4.63	3.03	.852**	.687**	.717**	.643**	
6. Age	22.97	8.32	-.211*	-.164*	-.208*	-.172*	-.213*

Note. *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the .01 level (2-tailed).

STUDY 2

Although study one addresses several aspects of perjury including frequency and motives, there is a difference between an individual's belief that he or she is unlikely to engage in perjury behaviors and the individual's actions. Study two was designed to address individuals' actions of perjury behaviors. The term *perjury-like behaviors* was used in this

study. Given that it would be unethical to ask participants to engage in criminal activity, the methodology was designed to replicate perjury in a non-criminal form. It was predicted that more individuals would engage in perjury-like behaviors when given an incentive, and that the total percentage of individuals who engaged in perjury-like behaviors would match the percentage of individuals who reported they committed perjury.

Participants: A total of 63 individuals, ages 18-44 (*M* = 19.75, *SD* = 3.36; 31.7% men, 68.3% women) participated in a two-part in-person study. There was a wide range of ethnicity (*Table 3*). Most participants were freshmen (57.1%) or sophomores (28.6) and pre-nursing (34.9%) or biology (12.7%) majors. Only a small percentage of participants were psychology majors (4.8%).

Table 3
Frequency Table of Ethnicity

	Frequency	Percent
Caucasian/White	21	33.3
Hispanic/Latino	23	36.5
African American/Black	6	9.5
Asian/Asian American	6	9.5
Mixed Race	4	6.3
Other	3	4.8

Procedure: Participants were recruited through SONA – the psychology department's participant pool. To protect the nature of the study, participants were informed they were participating in a two-part study on mathematical ability. All participants were awarded partial class credit or extra credit. Participation was confidential, and the results are anonymous. Participants were randomly assigned to one of two groups: control/no incentive

group and experimental/incentive group. Participation for part one was conducted in individual or group settings with no more than two participants at a time. Part two was conducted in an individual setting.

Once they arrived, participants read and agreed to the informed consent (Appendix C). The researcher utilized a script to ensure the same treatment for all participants (Appendix D). All participants completed a mathematics worksheet (Appendix E; Ariely, 2012) that they shredded in a modified shredder before exiting. Participants in the control/no incentive group only completed their worksheet, whereas participants in the experimental/incentive group were awarded $1 for every correct answer. Next, all participants filled out a demographics questionnaire (Appendix F), self-graded their worksheet, and reported the number of correct answers in a highlighted box on the demographics questionnaire.

Then, participants shredded their worksheet. The shredder available to participants was modified and did not shred the paper. Participants were awarded for their participation and asked to sign up for a timeslot for part two approximately two days from part one. Toppino and Cohen (2009) demonstrated that memory recall and overall performance was significantly better after two days. The researcher informed participants that they would complete a second mathematics worksheet designed to measure mathematical ability and retention in part two. When participants left, the researcher removed their worksheets from the shredder bin and placed the worksheet and questionnaire in each participants file. Participants' files were coded with a system used to ensure confidentiality of everyone. Identifying information, such as the informed consent, was kept in a folder separate from the participants' files.

Upon returning, the researcher would collect the participant's confidential file for easy access and matching. The researcher used a script (Appendix G) to inform all participants that the researcher suspected that some individuals might have cheated by recording a higher number of correct answers. The script helped the researcher ensure that all participants were aware that they were not being blamed for cheating. Participants were then asked to sign an oath claiming they did not cheat (Appendix H). The oath provided to the participants stated: "I agree that I provided to the best of my knowledge the correct number of problems I got right in part one of this study." A signature line followed the statement; however, participants who chose not to sign could mark a box provided on the oath that stated: "I do not wish to sign." Space below was provided if they chose to explain why they decided not to sign the oath.

Participants were reminded they were allowed to omit any answers without penalty. Participants who signed the oath and provided the incorrect number of right answers imitated the impression of engaging in perjury behaviors. Once the participants completed the oath, the researcher informed them the study was complete and thanked them for their participation.

Participants were then debriefed via a funnel debriefing on the true nature of the study (Appendix I). Funnel debriefing is a procedure used to inform the participants that the study they participated in used deception. In funnel debriefing, participants are asked general questions – such as "what do you think this study is measuring?" and "at any point did you question the true nature of this study?" – followed by more specific questions until the participants determine on their own that they participated in deception research. Funneled debriefings are used in deception research because the structure of the debriefing reduces any

stress the participant might experience when discovering her or she participated in deception research (Boynton, Portnoy, & Johnson, 2013).

The researcher apologized for using deception and explained deception was needed for this research because if participants knew the true nature of the study, they might act differently, and the validity of the study would be at risk. The researcher assured participants that no one, including the researcher, would know if the participant had indicated an incorrect number as no data was coded or entered until the completion of the stud, which ensured all participant data was anonymous. Once participants are made aware of the true nature of the study, they had the option to refuse their data (i.e., the data collected based on their demographics, their worksheet, and their oath) from the study. The participants were informed no data were electronically recorded, as their consent is required.

Each participant was provided with a second informed consent (Appendix J), which he or she had the opportunity to read and agree. The second informed consent outlined the true nature of the study, the benefits and risks involved, and a description of how their confidentiality is preserved. The second informed consent contained a space for the participants to indicate that they have been made aware of the true nature of the study. There was also space for the participants to mark and sign (yes) they allowed the submission of their data, or for the participants to mark and sign (no), they did not allow the submission of their data. After the participant signed the second informed consent, the researcher thanked him or her again for their participation and awarded his or her research credit. If the participant indicated that he or she would like to remove his or her data, the participant was given his or her file (i.e., the file containing their demographics questionnaire and their

falsely shredded math worksheet) to dispose of by ripping it up in front of the researcher. No participants refused to submit their data.

After the completion of the study, participant data was coded for manual entry into the statistical program used. The researcher reviewed the matrix worksheet and noted the number by which participants cheated by. A third party was asked to review and grade the matrix worksheet to ensure the correct number was recorded. The researcher then manually entered the data into SPSS and double-checked all data was entered correctly.

Results: Inferential and descriptive statistics were conducted to determine how many participants engaged in perjury behaviors (lied when signing their oath) and what factors (such as the incentive) influenced perjury behaviors. There were 32 participants in the control group and 31 participants in the experimental group. Overall, 54% of participants (46.9% of individuals in the control group and 61.3% of individuals in the experimental group; *figure 3*) engage in perjury-like behaviors reporting an inaccurate number of correct math problems and signing the oath. Participants who cheated reported an excess of one to three correct math problems ($M = 1.35$, $SD = 0.6$).

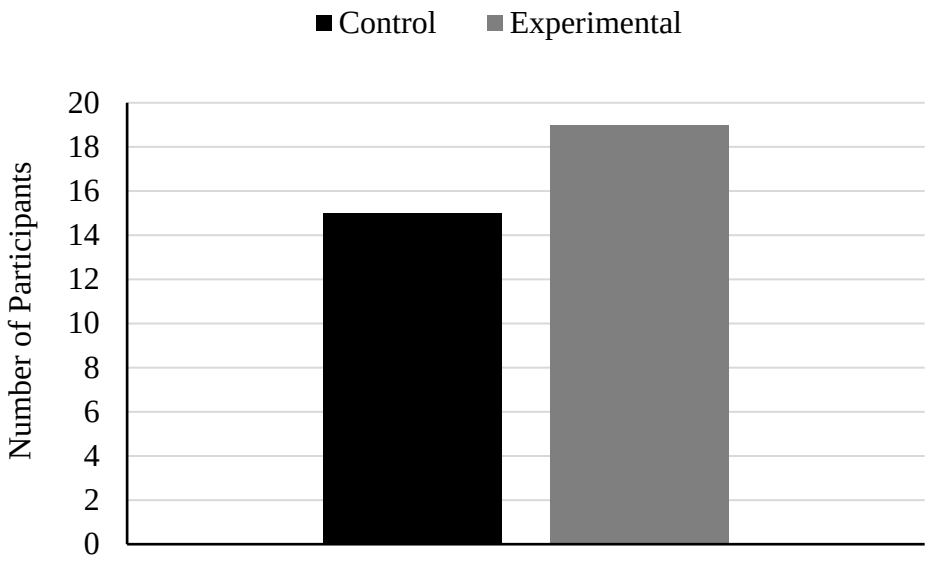


Figure 3. Histogram of cheating frequency across groups

To address H4, the researcher ran a Pearson's test of independence chi-square to compare the number of individuals who engaged in perjury behaviors in the experimental/incentive and control/no incentive conditions. There was no significant difference between the control and experimental group, meaning that a monetary incentive was not an indicator of cheating or perjury behaviors (χ^2 (1, N = 63) =1.32, p = .251). An independent-sample *t*-test further demonstrated no significant difference in the number of problems reported existed between the control (M = .72, SD = .92) and experimental (M = .74, SD = .68) groups (t(61) = -.11, p = .910).

To address H5 a goodness of fit chi-square was conducted to determine if a statistically significant difference exists between the percentage of individuals who engaged in perjury behaviors (in study two; 54%) from the percentage of individuals who were reported to committed perjury in study one (29.9%). There was a significant difference

between study one and study two (χ^2 (1, N = 63) = 17.41, p <000) with a small effect size (V = .02) indicating that the number of individuals who engaged in perjury behaviors were not closely matched, and H5 was not supported.

Goodness of fit chi squares were computed to determine if a statistically significant difference exists between the number of individuals who engaged in perjury behaviors from the number of individuals convicted (1.2%) of perjury as indicated by the Bureau of Justice Statistics (H6). There was a significant difference (χ^2 (1, N = 31) = 1479.61, p < .000) with a small effect size (r = 1.59). However, one cell (50%) had an expected frequency of less than five, violating the assumption that the sample size was large enough. Another chi-square indicated a statistically significant difference with a medium effect size exists between the number of individuals who engaged in perjury behaviors and the number of individuals suspected of perjury (8.85%) as indicated by the Bureau of Justice Statistics (χ^2 (1, N = 63) = 158.98, p < .000; r = 4.85; *Table 4*). The assumption of sample size was not violated.

Table 4
Chi Square Table of Expected Perjury-Like Behaviors

	Suspected Perjury		Convicted Perjury	
Engaged Perjury	Yes	No	Yes	No
Expected	5.6	57.4	0.8	62.2
Observed	34	29	34	29
Chi Square	χ^2	p	χ^2	p
	158.98	.000	1479.61	.000

Note: One cell had an expected frequency of less than five. The minimum expected frequency was .8.

DISCUSSION

This study aimed to increase the knowledge of perjury occurrences within the US legal system and to better understand the reasons that an individual might engage in perjury. The results from Study 1 supported H1 and H3 but not H2. To start, H1 stated the percentage of individuals who engage in perjury is greater than the percentage that is reported to the Bureau of Justice Statistics. The results were significant, indicating that more individuals engage in perjury behaviors than indicated by the Bureau of Justice Statistics. A couple of reason may account for the significant difference. First, most perjury cases result from a witness lying on the stand during a trial and not all matters of perjury (e.g., lying during an investigation, lying to avoid an investigation). This study considered all matters of perjury, such as lying about traffic violations, underage drinking, or drug violations.

Second, McKoski (2013) argued that the legal system knows how often perjury occurs, yet the courts often do not charge or prosecute those who engage in it. In fact, lawyers who know their clients intend to use false statements only need to remove themselves from the case, not report the intended perjury. Additionally, charging witnesses, defendants, or plaintiffs would be a financial burden to the court and legal system. According to the due process liberties (*i.e.*, amendments 4-9 and 14), all alleged criminals are innocent until proven guilty, and therefore entitled to a quick, speedy, and fair trial (Epstein & Walker, 2012) which can cost upwards of $142,000 (Spencer, Cauthron, & Edmunds, 1998), with the total court cost for 2015 approximating $5.675 billion (US Courts, 2015).

H2 predicted that individuals who reported to have engaged in perjury at least once would be more willing to commit perjury. The results indicated that there was no difference

in the willingness to commit perjury between individuals who have committed perjury and those who have not. The failure to reach significance may be a result of the ambiguity of the questions. Additionally, as noted by the fundamental attribution error, situations have a greater impact on behavior than an individual's disposition (Nisbett, Caputo, Legant, & Marecek, 1973).

To conclude study one, H3 suggested that individuals would be more willing to engage in perjury for a significant other and themselves. The results support this prediction showing that individuals were most willing to commit perjury for a significant other and a family member, and least likely to commit perjury for a oneself and a friend. The willingness to commit perjury may fit in Ekman's (1985) motives to lie. Ekman theorized individuals will lie to protect themselves or someone they care about. Previous lies, in theory, would have no effect on future motives to lie. Furthermore, the exploratory correlative analysis indicated that as an individual becomes older, they are less willing to engage in perjury. Although the correlations were relatively small, the results are applicable to the field of forensic psychology.

The results from study two did not support H4 or H5, but did support H6. First, H4 predicted that individuals who were given a monetary incentive would be more likely to engage in perjury-like behaviors. The results were not significant, contrary to the findings from Ariely (2012). Ariely's study showed that participants who were given a monetary incentive to cheat were more likely to cheat than those who were not given the same incentive. One potential reason for the inability to replicate Ariely's findings is the lack of immediate incentive. Additionally, the sample size in this study was relatively small, meaning the effect size is small and may not be discernable.

When looking at the frequency of individuals who engaged in perjury-like behaviors, the control group and experimental group were both high. Several reasons could account for the frequency of perjury-like behavior across both conditions. First, the sample was majority women (68.3%). Research indicates women tend to have higher mathematics related anxiety (Geary et al., 2019) and exhibit a greater social desirability bias (Chung & Monroe, 2003) which may lead to increased motive to cheat. Second, negative emotional burden has been shown to influence behavior more than monetary incentives (Van Der Zee et al., 2016).

Next, H5 stated that the percentage of individuals who reported to have engaged in perjury in study one would closely match the percentage of individuals who engaged in perjury-like behaviors in study two. Overall, there was a significant difference between the percentage of individuals who reported to have engaged in at least one form of perjury in study one and the percentage of individuals who engaged in perjury-like behaviors in study two. The percentage of participants who engaged in perjury-like behaviors in study two was larger than the percentage of those who reported engaging in perjury in study one.

Last, H6 predicted that the percentage of individuals who engaged in perjury-like behaviors would be greater than the percentage of individuals who were suspected or convicted of perjury as reported by the Bureau of Justice Statistics. The results were significant, suggesting that individuals are likely to commit perjury more often than the bureau reports. The greater than expected rates of perjury-like behaviors could be a result of the type of task the participants were completing. The stakes of lying about how many problems one got correct is much lower than being convicted of a crime, especially a felony. Replicating the stakes associated with committing a felony would be unethical and would cause a great deal of stress on participants.

LIMITATIONS

There were several limitations noted throughout this study. First, in study one, the wording was broad when asking the participant how likely he or she would be to lie for their significant other, friends, family, and self. The question did not take into account the different types of crime. For example, a participant might be more likely to lie to legal personnel about drugs, alcohol, or petty theft, but may be highly unlikely to lie about murder, rape, or pedophilia. The ambiguity of the wording may have led participants to report a lower or higher willingness to engage in perjury dependent on what type of crimes they were considering when taking this survey. Furthermore, regarding lying to protect a significant other, a federal statute is in place to protect victims of domestic violence. The statute makes it illegal to require an individual to testify against his or her spouse (Samaha, 2014). Thus, willingness to commit perjury for a significant other may not have as high of an impact on legal policy since an individual is not legally required to testify against his or her spouse.

Second, in study two, participants could self-grade their worksheet using the same writing utensil they used to complete the matrix worksheet. Although the researcher was observant, there was often more than one participant at a time, so there was a possibility that the participants could have circled the answers ex post facto. If participants did engage in this behavior, it would be more difficult for the researcher to accurately assess the frequency of which each participant lied. Additionally, 62 of the 63 participants expressed, by verbally stating, they were not good at math and were nervous, in completing a mathematics worksheet. The researcher assured all participants that their participation was voluntary, not to worry about the math, and to try their best. There was only one participant who expressed excitement in completing the worksheet and expressed sadness, as indicated by verbal

expression of disappointment, when told no other worksheet would be completed during the debriefing process. Van Der Zee and her colleagues (2016) suggest negative emotional appraisals have more of an impact on dishonest behaviors than physical incentives. Therefore, the negative affect felt by participants may have influenced their performance and honestly when reporting the number of problems they got correct.

Further, in study two, the experimental group was not given an immediate incentive to lie. Per university policy, participants were required to complete a form to receive a check in the mail and were not paid for their participation until upwards of two months following the completion of their participation. Baer, Wolf, and Risley (1968) point to the importance of immediate reinforcement on behavior, indicating the reinforcement has a greater effect on behavior when it immediately follows the action. Although the participants knew they would not receive the incentive for several weeks, they did not receive an immediate incentive for their cheating behaviors, and the likelihood of cheating may have been decreased.

Another limitation is the samples for both studies. In study one, the sample can be argued as biased. The link to the survey was distributed via the university's participant pool, Facebook, and the subreddit r/samplesize. The participant pool, while a useful tool, creates a convenience sampling. Facebook, depending on the settings in place, is limited to the friends of the individual who posts or shares the post, creating a convenient sampling pool as well, which decreases the external validity of the study. Reddit is more diverse in population; however, only a particular type of individual subscribes to the subreddit r/samplesize, which could create an unknown bias. Reddit is an open forum, and some participants may not have been from the United States. Likewise, in study, participants were recruited through the university’s Psychology participant pool. The pool is limited in diversity because it tends to

be freshmen in an introductory psychology course. Therefore, the results cannot be generalized to the public.

IMPLICATIONS AND GENERAL CONCLUSIONS

Although several of the hypotheses were not supported by the finding of this study, several implications can still be made for the field of forensic psychology. One of the more prevalent implications is that perjury occurs more often than expected, and more research needs to be done in order to understand the impact perjury has on the courts and police systems. In both studies, participants engaged in perjury at significantly high rates, indicating that deception is used almost as often as it is not used when speaking with legal personnel. The results also suggest that perjury is likely to occur most frequently for a significant other. Knowledge of the occurrence rate and possible motive for engaging in perjury can help investigators, lawyers, and police establish more sound ways of detecting when perjury occurs.

The results strongly suggest that perjury behaviors occur more often than is reported by the Bureau of Justice Statistics, indicating that individuals lie to legal personnel at a high rate. Future research should address the limitations listed to ensure greater external validity. Rather than using the matrix worksheet utilized by Ariely (2012), participants may be more inclined to cheat with a worksheet that is not based on mathematic ability because of the participants reaction to the worksheet. For example, Yap and his colleagues (2013) utilized and anagram worksheet when testing cheating behaviors. Additionally, participants should be given an immediate incentive rather than delayed gratification weeks later. Moreover, research should address other possible incentives for engaging in perjury, such as protecting oneself or others, avoiding trouble, or non-monetary gain.

In conclusion, the results support that deception occurs regularly. Further, individuals use deception frequently when speaking with legal personnel, such as police officers, judges, and lawyers. The results support that perjury occurs often, particularly to protect oneself from legal percussion (such as underage drinking tickets or speeding tickets). Young individuals are willing to sign an oath stating that they were truthful, thus indicating the willingness to engage in perjury.

REFERENCES

Ariely, D. (2012). *The (honest) truth about dishonesty: How we lie to everyone – especially ourselves*. New York: Harper.

Baars, B. J. (1988). *A cognitive theory of consciousness.* Cambridge, England: Cambridge University Press.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1,* 91-97.

Blair, J. P., Levine, T. R., & Shaw, A. S. (2010). Content in context improves deception detection accuracy. *Human Communication Research,* 36, 423–442. doi:10.1111/j.1468-2958.2010.01382.x.

Bond, C. F., & DePaulo, B. M. (2006). Accuracy of deception judgements. *Personality and Social Psychology, 10*(3), 214-234.

Brougham, C. G. (1992). Non-verbal communication: Can what they don't say give them away? *FBI Law Enforcement Bulletin, 61,* 15-18.

Burgoon, J. K., & Buller, D. B. (2008). Interpersonal deception theory: Purposive and interdependent behavior during deception. In Baxter, L. A. & Braithwaite, D. O. (Eds.), *Engaging Theories In Interpersonal Communication: Multiple Perspectives.* Thousand Oaks, CA: SAGE Publications Inc.

Carpenter, A. C., & Krendl, A. C. (2018). Are eyewitness accounts biased? Evaluating false memories for crimes involving in-group or out-group conflict. *Social Neuroscience, 13*(1), 74–93. https://doi-org.easydb.angelo.edu/10.1080/17470919.2016.1253610

Chung, J. & Monroe, G. S. (2003). Exploring social desirability bias. *Journal of Business Ethics, 44*(4), 291-302.

Criminal law – Perjury - Sixth circuit sustains perjury conviction for answer to question with mistaken premise. *United States v. DeZarn*, 157 F.3d 1042 (6th Cir. 1998). (1999). Harvard Law Review, 112(7), 1783-1788. doi:10.2307/1342420

Curtis, D. A. & Hart, C. L. (2015). Does Pinocchio's nose grow in therapy? Therapists' attitudes and beliefs toward client deception. *International Journal for the Advancement of Counselling, 37*5, 279-292

DePaulo, B. M., Kashy, D. A., Kirkendol, S. E., Wyer, M. M., & Epstein, J. A. (1996). Lying in everyday life. *Journal of Personality and Social Psychology, 70*, 979–995.

Ekman, P. (1985). *Telling lies: Clues to deceit in the marketplace, politics, and marriage.* New York: W. W. Norton & Company.

Ekman, P., & O'Sullivan, M. (1991). Who can catch a liar? *American Psychologist, 48*, 913-920.

Epstein, L. & Walker, T. G. (2012). *Constitutional law for a changing America: A short course* (5th ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Feldman, R. S., Forrest, J. A., & Happ, B. R. (2002). Self-presentation and verbal deception: Do self-presenters lie more? *Basic and Applied Social Psychology, 24*(2), 163–170.

Geary, D. C., Hoard, M. K., Nugent, L., Chu, F., Scofield, J. E., & Ferguson Hibbard, D. (2019). Sex differences in mathematics anxiety and attitudes: Concurrent and longitudinal relations to mathematical competence. *Journal of Educational Psychology*. https://doi-org.easydb.angelo.edu/10.1037/edu0000355

George, J. F., & Robb, A. (2008). Deception and computer-mediated communication in daily life. *Communication Reports, 21*, 92-103.

Green, S. P., & Kugler, M. B. (2012). Public perceptions of white-collar crime and culpability: Bribery perjury, and fraud. *Law and Contemporary Problems 75*(33), p. 33-59.

Grice, H. P. (1989). *Studies in the way of words.* Cambridge, MA: Harvard University Press.

Hartwig, M., Granhag, P. A., Strömwall, L. A., & Vrij, A. (2004). Police officers' lie detection accuracy: Interrogating freely versus observing video. *Police Quarterly, 7*(4), 429-456. doi: 10.1177/1098611104264748

Holst, V. F., & Pezdek, K. (1992). Scripts for typical crimes and their effects on memory for eyewitness testimony. *Applied Cognitive Psychology, 6*(7), 573–587.

Hovy, E. H. (1990). Pragmatics and natural language generation. *Artificial Intelligence, 43*, 153-197.

Joshi, M. (2014). *Dictionary of Root Words: Latin and Greek Roots.*

Leach, A., Anmar, N., England, N., Remigio, L. M., Kleinberg, B., & Verschuere, B. J. (2016). Less is more? Detecting lies in veiled witnesses. *Law and Human Behavior, 40*(4), 401-410. doi: 10.1037/1hb0000189.

Levine, T. R. (2014). Truth-default theory (TDT): A theory of human deception and deception detection. *Journal of Language and Social Psychology, 33*(4), 378-392. doi:10.1177/0261927X14535916

Masip, J., & Herrero, C. (2015). Police detection of deception: Beliefs about behavioral cues to deception are strong even though contextual evidence is more useful. *Journal of Communication, 65*, 125-145.

McCornack, S. A., Morrison, K., Paik, J. E., Wisner, A. M., & Zhu, X. (2014). Information manipulation theory 2: A propositional theory of deceptive discourse production. *Journal of Language and Social Psychology, 33*(4), 348-377. doi:10.1177/0261927X14534656

McKoski, R. J. (2013). Prospective perjury by a criminal defendant: It's all about the lawyer. *Arizona State Law Journal, 44*, 1575-1645.

Motivans, M. (2015). Federal justice statistics, 2012- statistical tables. *US Department of Justice Bureau of Justice Statistics.*

Rosenfeld, J. (2018). 8 ways to tell if someone is lying to you. *Mental Floss*. Retrieved from http://mentalfloss.com/article/526843/how-to-tell-if-someone-is-lying

Samaha, J. (2014). *Criminal Lie* (5th Ed.). Belmont, CA: Wadsworth Cengage Learning.

Serota, K. B., Levine, T. R., & Boster, F. J. (2010). The prevalence of lying in America: Three studies of self-reported lies. *Human Communication Research, 36*, 2-25. doi:10/1111/j.1468-2958.01366.x

Sooniste, T., Granhag, P. A., & Strömwall, L. A. (2017). Training police investigators to interview to detect false intentions. *Journal for Police and Criminal Psychology, 32*, 152-162. doi: 10.1007/s1189-016-9206-9

Spencer, J. R., Cauthron, R. J., & Edmunds, N. G. (1998). Federal death penalty cases: Recommendations concerning the cost and quality of defense representation. *US Courts.*

Sporer, S., & Schwandt, B. (2006). Paraverbal indicators of deception: A meta-analytic synthesis. *Applied Cognitive Psychology, 20*, 421-446.

Suchotzki, K., Verschuere, B., Van Boackstaele, B. & Ben-Shakhar, G. (2017). Lying takes time: A meta-analysis on reaction time measures of deception. *Psychological Bulletin, 143*(4), 428-453.

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*(2), 257-285. https://doi.org/10.1016/0364-0213(88)90023-7

Toppino, T. C., & Cohen, M. S. (2009). The testing effect and the retention interval: Questions and answers. *Experimental Psychology, 56*(4), 252–257. https://doi-org.easydb.angelo.edu/10.1027/1618-3169.56.4.252

United States Courts (2015). Combined filings of civil cases and criminal defendants in the district courts. US District Courts – Judicial Business. Retrieved from: http://www.uscourts.gov/statistics-reports/us-district-courts-judicial-business-2015

Van Der Vee, S., Anderson, R., & Poppe, R. (2016). When lying feels like the right thing to do. *Frontiers in Psychology, 7*. doi:103389/fpsyg.2016.00734

Vrij, A. (2008). *Detecting lies and deciet: Pitfalls and opportunities* (2nd ed.). Chichester, England: John Wiley & Sons Ltd.

Vrij, A. Akehurst, L., Soukara, S., & Bull, R. (2004). Detecting deceit via analyses of verbal and non-verbal behavior in children and adults. *Human Communication Research, 30*(1), 8-41.

Vrij, A., Fisher, R., Mann, S., & Leal, S. (2006). Detecting deception by manipulating cognitive load. *Trends in Cognitive Sciences, 10,* 141-142.

Vrij, A., & Lochun, S. (1997). Neuro-linguistich verhoren, In P. J. Van Koppen, D. J. Hessing & H. F. M. Crombad (Eds.), *Het Hart van de zaak: Psychologie van het recht.* Deventer: Kluwer, 493-505.

Vrij, A., & Mann, S. (2001). Telling and detecting lies in high-stake situation: The case of a convicted murderer. *Applied Cognitive Psychology, 15*, 187-203.

Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Yap, A. J., Wazlawek, A. S., Lucas, B. J., Cuddy, A. J. C., & Carney, D. R. (2013). The Ergonomics of Dishonesty: The Effect of Incidental Posture on Stealing, Cheating, and Traffic Violations. *Psychological Science, 24*(11), 2281–2289. https://doi-org.easydb.angelo.edu/10.1177/0956797613492425.

Zipf, G. K. (1949). *Human behavior and the principle of least-effort.* Cambridge, MA: Addison-Wesley.

Zuckerman, M., DePaulo, B. M., & Rosenthal, R. (1981). Verbal and nonverbal communication of deception. *Advances in Experimental Social Psychology.* doi: 10.1016/S0065-2601(08)60369-x

APPENDICES

APPENDIX A

Angelo State University

Institutional Review Board (IRB) - Approved Online Research

Project Title: Perjury: Establishing a better understanding of the forgotten crime

Investigator Name/Department: Stephanie Crank/Department of Psychology and Sociology

Faculty Advisor: Drew Curtis, Ph.D.

Investigator Email and Phone: scrank@angelo.edu 325-486-6125

You are being asked to participate in a research event conducted with the approval of the Angelo State University Institutional Review Board (and if applicable, other relevant IRB committees). In order to participate, you are required to give your consent after reading this document.

You must be at least 18 years of age to give consent and participate in this study.

An explanation of the project is written below, which includes information about the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. Please read and, should you decide to participate, indicate your agreement on this form. Upon request, you will be given an unsigned copy of this form for your records.

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time without penalty. I understand also that it is not possible to identify all potential risks in an experimental procedure, and I believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

1. Nature and Purpose of the Project

You are being asked to participate in a research study for Stephanie Crank at Angelo State University. The purpose of this study is to assess the perjury behaviors for the general US population. You are only permitted to participate once in the current study.

2. Explanation of Procedures.

The survey asks questions enquiring about your behaviors regarding crime, your interactions with officers of the law, and basic demographics such as age and occupation. Completing the

study will take approximately 5 minutes. No compensation will be provided for the completion of this survey.

3. Discomfort and Risks.

The risks of participating in this study are minimal and not expected to be greater than experienced in daily life. Some of the questions may cause some individuals to feel uncomfortable, and everyone has the right to omit answers to any questions.

4. Benefits.

The findings from this study can add to the existing knowledge related to psychology and law, more specifically related to the tendency to engage in perjury behaviors.

5. Confidentiality.

Your confidentiality is important. Data will be accessible only to the researchers through a secure password-protected online data collection host, Qualtrics, which uses secure protocols and data encryption. This data will be saved on an encrypted USB jump drive and locked within Dr. Curtis's office (Academic Building 204D) at Angelo State University and accessible to the principle investigator and faculty advisor through Dropbox. The file will only be accessed within a password-protected ASU computer. The data will be retained for at least 3 years after completion of the study. You may risk a loss of confidentiality if you choose to email the researchers to ask for results of the study. If you choose to email the researchers, then the researchers will immediately delete such emails after responding to them. There is a potential risk of loss of confidentiality in all email, downloading, and internet transactions.

Agreement: By clicking on the continue button below you are indicating that you have read the above procedures and that you are consenting to voluntarily participate in this study.

This project has been reviewed and approved by the Angelo State University Institutional Review Board (IRB) for the protection of human subjects in research and research related activities. **IRB #000000 – Date of approval (to be completed by the IRB chair)**

Any questions regarding the conduct of the project, questions pertaining to your rights as a research subject, or research-related injury should be brought to the attention of the IRB administrator, Dr. Adam Parker through email: adam.parker@angelo.edu or phone: 325-486-6172

Any question about this specific research project should be brought to the attention of the investigator listed at the top of this form.

To participate in this research, type your age below and select continue.

APPENDIX B

Please answer the following. **REMINDER: Your answers are anonymous and voluntary. You may skip any questions you do not wish to answer.**

1. Has an officer of the law (police, detective, judge, etc.) ever asked you to provide information regarding a crime, including traffic violations? **Yes or No**
    a. If yes, how many times were you asked to provide information regarding a crime, including traffic violations?

        _____

    b. If yes, did you to the best of your ability provide correct and accurate information about the crime, including traffic violations?

        Yes or No

        i. If no, how many times did you provide incorrect or inaccurate information about the crime, including traffic violations?

            _____

2. Have you ever been asked to serve as a witness during an investigation or trial?

    Yes or No

    a. If yes, how many times were you ask to serve as a witness during an investigation or trial?

        _____

    b. If yes, did you to the best of your ability provide correct and accurate information about what you witnessed, including traffic violations?

        Yes or No

        i. If no, how many times did you provide incorrect or inaccurate information about what you witnessed, including traffic violations?

            _____

3. Have you ever been asked to sign an oath as part of an investigation regarding a crime (including traffic violations, underage drinking, illicit drug use, etc.)? **Yes or No**
    a. If yes, how many times did you sign an oath as part of an investigation regarding a crime (including traffic violations, underage drinking, illicit drug use, etc.)?

        _____

    b. If yes, did you to the best of your ability provide truthful and non-misleading statements or materials while under oath? **Yes or No**

        i. If no, how many times did you provide untruthful or misleading statements or materials while under oath? _____

4. Have you ever presented any information to an officer of the law as truth though you believe it to be false? **Yes or No**

a. If yes, how many times have you presented information to an officer of the law as truth though you believed it to be false?

_____

b. If yes, please explain what information you presented as truth that you believed to be false.

5. Have you provided false information to an officer of the law (police, detective, judge, etc.) about a crime you **witnessed** (including traffic violations, underage drinking, illicit drug use, etc.)

Yes or No

a. If yes, how many times have you provided false information to an officer of the law (police, detective, judge, etc.) about a crime you **witnessed** (including traffic violations, underage drinking, illicit drug use, etc.)

_____

6. Have you provided false information to an officer of the law (police, detective, judge, etc.) about a crime you **engaged in** (including traffic violations, underage drinking, illicit drug use, etc.)

Yes or No

a. If yes, how many times have you provided false information to an officer of the law (police, detective, judge, etc.) about a crime you **engaged in** (including traffic violations, underage drinking, illicit drug use, etc.)

_____

Please indicate on a scale of 1-10 (1 being not at all likely and 10 being very likely) the degree to which you would engage in the following. **REMINDER: Your answers are anonymous and voluntary. You may skip any questions you do not wish to answer.**

7. How likely are you to provide false information to an officer of the law about a crime (including traffic violations, underage drinking, illicit drug use, etc.) in order to protect **your significant other**?

1 2 3 4 5 6 7 8 9 10

8. How likely are you to provide false information to an officer of the law about a crime (including traffic violations, underage drinking, illicit drug use, etc.) in order to protect **your friends ?**

1 2 3 4 5 6 7 8 9 10

9. How likely are you to provide false information to an officer of the law about a crime (including traffic violations, underage drinking, illicit drug use, etc.) in order to protect **your family**?

1 2 3 4 5 6 7 8 9 10

10. How likely are you to provide false information to an officer of the law about a crime (including traffic violations, underage drinking, illicit drug use, etc.) in order to

protect **yourself**?

1 2 3 4 5 6 7 8 9 10

11. Please mark 5 as your answer to this question to ensure the integrity of this study.

1 2 3 4 5 6 7 8 9 10

Please answer the following demographic questions. **REMINDER: Your answers are anonymous and voluntary. You may skip any questions you do not wish to answer.**

12. Gender: _____
13. Ethnicity: _____
14. Level of education: _____
15. Area of Occupation: _____

APPENDIX C

No incentive/Control Group

Angelo State University

Institutional Review Board (IRB)

Consent to Participate in an IRB-Approved Research Event

Project Title: Understanding Student's Mathematical Ability

Investigator Name/Department: Stephanie Crank/Department of Psychology and Sociology

Faculty Advisor: Drew Curtis, Ph.D.

Investigator Email and Phone: scrank@angelo.edu 325-486-6125

You are being asked to participate in a research event conducted with the approval of the Angelo State University Institutional Review Board (and if applicable, other relevant IRB committees). In order to participate, you are required to give your consent by reading and signing this document.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have at any time before the project begins. A basic explanation of the project is written below. Please read and, should you decide to participate, sign this form in the presence of the person who explained the project to you. Upon request, you will be given an unsigned copy of this form for your records.

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time without penalty. I understand also that it is not possible to identify all potential risks in an experimental procedure, and I believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

1. Nature and Purpose of the Project

The purpose of this study is to assess the mathematical ability of students at ASU. You are only permitted to participate once in the current study.

2. Explanation of Procedures.

The study will consist of two parts, each taking approximately 15 minutes to complete (for a total of 30 minutes). The study will consist of participants completing one mathematics worksheet and one demographics questionnaire. Participants were asked to report the number of problems they got correct on their worksheet. Participants will be asked

to return two days later to follow up on the mathematical worksheet. Participants will be awarded 1 research credit/extra credit (0.5 credits for each part).

3. Discomfort and Risks.

The risks of participating in this study were minimal and not expected to be greater than experienced in daily life. Some individuals may be uncomfortable with submitting their data to this project, and everyone has the right to omit their data without penalty.

4. Benefits.

Your involvement in this research study is completely voluntary, and you may discontinue your participation in this study at any time without penalty. The findings from this study can add to the existing knowledge related to mathematical information and psychology.

5. Confidentiality.

Your confidentiality is important. This data will be saved on an encrypted USB jump drive and locked within Dr. Curtis's office (Academic Building 204D) at Angelo State University and accessible to the principle investigator and faculty advisor through Dropbox. The file will only be accessed within a password-protected ASU computer. The data will be retained for at least 3 years after completion of the study. All identifying information will be de-identified from research material. You may risk a loss of confidentiality if you choose to email the researchers to ask for results of the study.
The dated approval stamp on this consent form indicates that this project has been reviewed and approved by the Angelo State University Institutional Review Board (IRB) for the protection of human subjects in research and research related activities.

Any questions regarding the conduct of the project, questions pertaining to your rights as a research subject, or research-related injury should be brought to the attention of the IRB administrator, Dr. Adam Parker through email: adam.parker@angelo.edu or phone: 325-486-6172
Any question about the conduct of this research project should be brought to the attention of the investigator as listed on this form.

_____

Participant Signature Date

_____

Witness Signature Date

Incentive/Experimental Group

Angelo State University

Institutional Review Board (IRB)

Consent to Participate in an IRB-Approved Research Event

Project Title: Understanding Student's Mathematical Ability

Investigator Name/Department: Stephanie Crank/Department of Psychology and Sociology

Faculty Advisor: Drew Curtis, Ph.D.

Investigator Email and Phone: scrank@angelo.edu 325-486-6125

You are being asked to participate in a research event conducted with the approval of the Angelo State University Institutional Review Board (and if applicable, other relevant IRB committees). In order to participate, you are required to give your consent by reading and signing this document.

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have at any time before the project begins. A basic explanation of the project is written below. Please read and, should you decide to participate, sign this form in the presence of the person who explained the project to you. Upon request, you will be given an unsigned copy of this form for your records.

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time without penalty. I understand also that it is not possible to identify all potential risks in an experimental procedure, and I believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

1. Nature and Purpose of the Project

The purpose of this study is to assess the mathematical ability of students at ASU. You are only permitted to participate once in the current study.

2. Explanation of Procedures.

The study will consist of two parts, each taking approximately 15 minutes to complete (for a total of 30 minutes). The study will consist of participants completing one mathematics worksheet and one demographics questionnaire. You will be asked to report the number of problems you got correct on their worksheet. You will be paid $1 for every correct answer on your worksheet. You will be asked to return two days later to follow up on the

mathematical worksheet. Participants will be awarded 1 research credit/extra credit (0.5 credits for each part). You will be paid via a check written in your name and mailed to the address you provide for as little as $1 to as much as $10. You will be required to fill out the *recipient information form*, which I will provide for you. The check may take up to 4-6 weeks to arrive after today's date.

3. Discomfort and Risks.

The risks of participating in this study were minimal and not expected to be greater than experienced in daily life. Some individuals may be uncomfortable with submitting their data to this project, and everyone has the right to omit their data without penalty.

4. Benefits.

Your involvement in this research study is completely voluntary, and you may discontinue your participation in this study at any time without penalty. The findings from this study can add to the existing knowledge related to mathematical information and psychology.

5. Confidentiality.

Your confidentiality is important. This data will be saved on an encrypted USB jump drive and locked within Dr. Curtis's office (Academic Building 204D) at Angelo State University and accessible to the principle investigator and faculty advisor through Dropbox. The file will only be accessed within a password-protected ASU computer. The data will be retained for at least 3 years after completion of the study. All identifying information will be de-identified from research material. You may risk a loss of confidentiality if you choose to email the researchers to ask for results of the study.

The dated approval stamp on this consent form indicates that this project has been reviewed and approved by the Angelo State University Institutional Review Board (IRB) for the protection of human subjects in research and research related activities.

Any questions regarding the conduct of the project, questions pertaining to your rights as a research subject, or research-related injury should be brought to the attention of the IRB administrator, Dr. Adam Parker through email: adam.parker@angelo.edu or phone: 325-486-6172

Any question about the conduct of this research project should be brought to the attention of the investigator as listed on this form.

_____

Participant Signature Date

_____

Witness Signature Date

APPENDIX D

Study 2 Script

Hello, my name is Stephanie, and I am the principle investigator for this study. Here is the informed consent, and I will go over it with you before you sign. You are being asked to participate in a research event conducted with the approval of the Angelo State University Institutional Review Board. In order to participate, you are required to give your consent by reading and signing this document.

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time without penalty. I understand also that it is not possible to identify all potential risks in an experimental procedure, and I believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

This is a two-part study. The purpose of this study is to understand the general mathematic ability of students. Students are asked to return to complete a second worksheet, comparing the two scores. Should you choose to participate, I will provide you with a matrix worksheet. You will have a limited number of minutes to complete this worksheet. I will also provide you with a basic demographics questionnaire. After you complete the worksheet, you will fill out the questionnaire. You will indicate the number of answers you got correct on your demographics questionnaire. After, you will shred your worksheet and turn the questionnaire in to me. *For the experimental group only:* You will be awarded $1.00 for every correct answer. You will be paid via a check written in your name and mailed to the address you provide for as little as $1 to as much as $10. You will be required to fill out the *recipient information form*, which I will provide for you. The check may take up to 4-6 weeks to arrive after today's date. Do you have any questions so far?

The risks of participating in this study are minimal and not expected to be greater than experienced in daily life. Some of the questions may cause some individuals to feel uncomfortable, and everyone has the right to omit answers to any questions without penalty.

Your confidentiality is important. This data will be saved on an encrypted USB jump drive and locked within Dr. Curtis's office (Academic Building 204D) at Angelo State University and accessible to the principle investigator, that is me, and the faculty advisor, that is Dr. Curtis, through Dropbox. The file will only be accessed within a password-protected ASU computer. The data will be retained for at least 3 years after completion of the study. You may risk a loss of confidentiality if you choose to email the researchers to ask for results of the study.

Do you have any questions or concerns?

Do you wish to participant?

If no Thank you for considering this study. Have a nice day. *If yes* Please sign here. Would you like a copy of the informed consent?

APPENDIX E

Participants had four minutes to circle the two numbers that add to 10.

Mathematic worksheet, found on Google Images (Ariely, 2012).

1.69	1.82	2.91
4.67	2.81	3.15
5.82	5.06	4.28
6.36	7.19	4.57

1.17	4.83	7.76
5.66	1.86	5.17
6.83	5.95	4.25
7.01	6.28	3.82

0.49	0.74	1.13
3.72	2.66	1.22
3.75	5.22	5.67
8.87	8.23	7.71

0.47	4.61	2.57
3.17	3.82	4.38
4.94	5.39	5.98
2.15	4.86	7.54

2.92	4.98	4.34
1.39	0.72	5.53
8.61	3.57	3.36
6.8	0.53	7.58

0.81	1.31	2.09
4.55	3.75	3.12
5.62	9.41	6.88
7.02	8.48	8.51

0.17	3.46	2.44
6.02	2.46	2.63
6.05	6.21	6.61
8.22	8.19	7.54

4.74	4.78	0.83
1.61	5.97	4.09
5.96	3.29	9.09
0.87	9.13	2.71

6.21	2.47	9.57
2.68	9.52	4.52
8.72	7.69	1.47
6.41	4.44	7.32

3.08	9.42	5.87
3.94	5.41	3.42
4.02	5.06	4.12
4.13	4.65	2.86

3.15	0.95	1.31
4.98	2.9	2.88
6.66	6.73	7.67
9.75	6.85	8.17

0.63	0.65	1.02
2.64	2.34	2.12
2.89	5.98	8.89
9.49	9.37	9.33

2.22	4.51	7.13
9.33	9.77	5.86
7.04	4.14	5.22
2.28	1.72	8.16

0.74	4.55	3.19
8.51	7.91	8.68
5.62	0.81	2.11
3.75	3.72	2.09

5.97	9.62	9.41
3.61	7.39	7.01
5.49	0.59	2.62
7.51	5.71	0.49

4.73	2.12	8.99
0.63	8.89	9.33
1.02	2.34	4.98
1.11	0.65	2.91

0.12	0.71	0.74
4.27	3.07	2.27
5.09	5.73	5.82
9.27	7.03	6.79

0.74	1.93	2.76
7.24	5.03	3.14
7.71	6.38	3.19
8.28	9.18	9.48

0.14	2.67	2.22
5.96	5.58	5.22
7.04	7.78	9.33
9.77	9.5	8.52

4.16	4.51	1.66
8.29	8.05	9.03
4.73	5.84	9.86
5.21	3.94	7.18

1.69	1.82	2.91
4.67	2.81	3.15
5.82	5.06	4.28
6.36	7.19	4.57

1.17	4.83	7.76
5.66	1.86	5.17
6.83	5.95	4.25
7.01	6.28	3.82

0.49	0.74	1.13
3.72	2.66	1.22
3.75	5.22	5.67
8.87	8.23	7.71

0.47	4.61	2.57
3.17	3.82	4.38
4.94	5.39	5.98
2.15	4.86	7.54

2.92	4.98	4.34
1.39	0.72	5.53
8.61	3.57	3.36
6.8	0.53	7.58

0.81	1.31	2.09
4.55	3.75	3.12
5.62	9.41	6.88
7.02	8.48	8.51

0.17	3.46	2.44
6.02	2.46	2.63
6.05	6.21	6.61
8.22	8.19	7.54

4.74	4.78	0.83
1.61	5.97	4.09
5.96	3.29	9.09
0.87	9.13	2.71

6.21	2.47	9.57
2.68	9.52	4.52
8.72	7.69	1.47
6.41	4.44	7.32

3.08	9.42	5.87
3.94	5.41	3.42
4.02	5.06	4.12
4.13	4.65	2.86

3.15	0.95	1.31
4.98	2.9	2.88
6.66	6.73	7.67
9.75	6.85	8.17

0.63	0.65	1.02
2.64	2.34	2.12
2.89	5.98	8.89
9.49	9.37	9.33

2.22	4.51	7.13
9.33	9.77	5.86
7.04	4.14	5.22
2.28	1.72	8.16

0.74	4.55	3.19
8.51	7.91	8.68
5.62	0.81	2.11
3.75	3.72	2.09

5.97	9.62	9.41
3.61	7.39	7.01
5.49	0.59	2.62
7.51	5.71	0.49

4.73	2.12	8.99
0.63	8.89	9.33
1.02	2.34	4.98
1.11	0.65	2.91

0.12	0.71	0.74
4.27	3.07	2.27
5.09	5.73	5.82
9.27	7.03	6.79

0.74	1.93	2.76
7.24	5.03	3.14
7.71	6.38	3.19
8.28	9.18	9.48

0.14	2.67	2.22
5.96	5.58	5.22
7.04	7.78	9.33
9.77	9.5	8.52

4.16	4.51	1.66
8.29	8.05	9.03
4.73	5.84	9.86
5.21	3.94	7.18

APPENDIX F

Basic Demographics Questionnaire

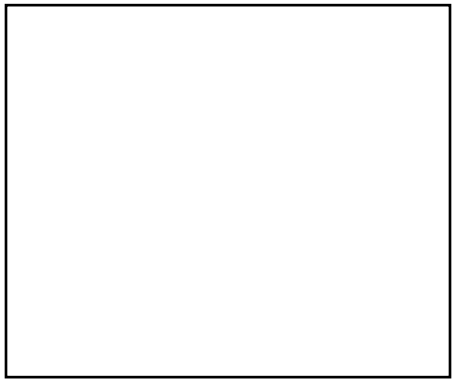
Age: _____ Gender: _____ Ethnicity: _____

Year in school (please circle):

Freshman Sophomore Junior Senior Grad Student

Major: _____ Minor:_____

Please indicate the number of correct answers in the box below:



APPENDIX G

Script to be used when asking participants to sign the following oath and prior to funnel debriefing:

Welcome back to the second part of this study. Before we begin, I have reason to believe that a participant in this study cheated on their math worksheet. I do not believe that you cheated; however, to cover my bases I am asking all participants to sign this oath. The oath states that you reported the correct number of problems you got right. Will you please sign here?

After This now completes the study, no other math form will be completed. Thank you for participating.

Mathematics Study Oath

I am a participant in the mathematical ability study at Angelo State University. I agree that I provided to the best of my knowledge the correct number of problems I got right in part one of this study.

X_____ Date _____

☐ I do not wish to sign the oath.

If you wish to explain why you did not sign, please do so in the space below:

_____

_____

_____

APPENDIX H

Script for Funnel Debriefing

Thank you so much for taking the time to participant in this study. What do you believe the nature of this study is?
At any point, did you question the true nature of this study?
What thoughts did you have about the true nature of this study?
What are any other possible options for the nature of this study?
Is it possible that this study was about something other than mathematical ability? What evidence suggests that it is not?

First, I want to apologize for not telling you the true nature of the study at the beginning. The true nature of this study was establish a better understanding of perjury behaviors. In order to establish this, I could not tell participants the true nature of the study because it would influence how they behaved. I am so sorry for withholding this information from you and I want to thank you again for your participation.

Second, I want to ensure you that no one, including myself will ever know if you indicated the incorrect or correct number of right answers on your worksheet. At this time, I have not reviewed yours or any other worksheet. All identifying information has been kept separately from the data. The worksheets will not be reviewed until all participation is complete. This ensures that I do not know the identity of those who may have engage in perjury-like behaviors. Additionally, no faculty member will have access to identifying information, except that you signed up for this study via SONA and received the credit for it. The name of the study on SONA does not reflect the true nature of the study, so your participation reflects you partook in a study on mathematical behaviors. I want to ensure you that all data is completely anonymous. Do you have any questions regarding your confidentiality or anonymity?

All participants received research SONA credits, and participants were randomly assigned to one of two conditions. Some participants were in the control group, and only received the SONA credit; others were in the experimental group and received the SONA credit and a monetary reward for each correct answer. Your participation helps build on the growing field of forensic psychology.

This type of research is needed because if participants were aware of the true nature, many would not provide the accurate information. Again, I apologize for any undue stress or burden that may have resulted. No data has been added into the statistical program that we use yet, and I have not looked at anyone’s file, so I have no idea if or who provided the true number or not. You have the option to remove your data from the study. If you choose to do so, I will hand you your file to dispose of how you please. If you choose to keep your data in the study, I will write either yes or no on the file indicating that an oath was or was not signed. Then, I will remove any and all identifying information (such as your informed consents and oath because it has your name) and place the file with all the others who agreed

to submit their data. Once all participants have finished the study, then I will code the data and determine if the now anonymous participant provided the number of correct problems or not. If you wish to find the results of the study, I will be presenting this research at Angelo State University's graduate symposium, or you can find a link to my thesis on Dr. Curtis's Lab page. You can access Dr. Curtis's Lab page by going to angelo.edu, searching for Drew Curtis, and selecting on the link to his University profile. Under his profile, where it says links, you can select "Curtis Lab". Additionally, you can go to https://www.angelo.edu/dept/psychology_sociology/deception-lab.php.

APPENDIX I

PERMISSION TO USE DATA FORM

Stephanie Crank
Department of Psychology and Sociology

Purpose of Research

The actual purpose of this experiment is to gain a better understanding of people's tendency to engage in lying behaviors. More specifically, we are interested in seeing if individuals are willing to engage in perjury behaviors as indicated by lying and signing an oath.

Specific Procedures Used

In this research, we are interested in determining the frequency of perjury behaviors. Some participants were only asked only to complete the mathematics worksheet and awarded research credit. Other participants were asked to complete the mathematics worksheet, given an incentive of $1 for every correct answer, and awarded research credit. In all cases, participants were part of the experiment and the statements the researcher made were scripted for the purpose of the study. Virtually no research has been previously conducted on perjury behaviors; however, research has looked into the public's opinion on perjury. In the present study, the researcher observed if participants engaged in perjury if they claim they correctly answered more questions on their worksheet than their worksheet shows and signed the oath claiming that they did not provide a false number.

The researcher won't determine how many participants engaged in the perjury behavior of claiming they answered more questions correctly on their worksheet than their worksheet shows until after the completion of this form. The researcher will deidentify all information, and only then will the researcher determine if the participant engaged in perjury behaviors.

Why Deception Was Necessary

Usually we try our best to avoid using deception in experiments, but we hope you understand that in this case it was necessary in order to study perjury behaviors. In other words, if people know ahead of time that the experiment actually investigates, reactions to the worksheet and oath might influence their responses.

Confidentiality

All of the information you provide will be kept confidential, as well as your participation in this study. Your data will be combined with that of other participants and will be reported at the group level. Data will be kept in a locked cabinet in the laboratory of the faculty advisor and only accessible by the principle investigator and faculty advisor. Data is required to be retained for a minimum of three years following the completion of the study, after which all data may be deleted and shredded.

Human Subject Statement

If you have any questions about this research project, contact Dr. Drew Curtis by email: drew.curtis@angelo.edu or phone: 325-486-6932. If there are concerns about the treatment of research participants, contact the committee member of the Institutional Review Board, Dr. Adam Parker through email: adam.parker@angelo.edu or phone: 325-486-6172

I HAVE BEEN FULLY DEBRIEFED BY THE EXPERIMENTER, I HAVE HAD THE OPPORTUNITY TO READ THIS CONSENT FORM, AND I HAVE BEEN GIVEN THE OPPORTUNITY TO ASK QUESTIONS ABOUT THE RESEARCH PROJECT. AS A RESULT,

Please initial one of the following statements:

_____ PLEASE DISCARD ALL DATA COLLECTED

_____ I GIVE PERMISSION TO HAVE MY DATA USED IN THIS RESEARCH PROJECT

_____ _____

Participant's Signature Date

_____

Participant's Name

_____ _____

Researcher's Signature Date

APPENDIX J

ANGELO STATE UNIVERSITY
College of Graduate Studies
Institutional Review Board

12/10/2018

Dr. Drew Curtis
Dept. of Psychology & Sociology
Angelo State University
San Angelo, TX 76909

Dear Drew:

The project that you submitted for your student, Stephanie Crank, titled, *"Perjury: Establishing a Better Understanding of the Forgotten Crime"* was reviewed by Angelo State University's Institutional Review Board for the Protection of Human Research Subjects in accordance with federal regulations 45 CFR 46 for expedited review and was approved under Category F.7 of 63 FR 60364-60367.

This protocol is approved for one year effective December 10, 2018, and it expires one year from this date. If the study will continue beyond one year, you must submit a request for continuation before the current protocol expires. The documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of December 10, 2019.

Please note that any revisions to these approved materials must be approved by the IRB prior to initiation. All unanticipated problems involving risks to subjects or others, and any unexpected adverse events must be reported promptly to this office.

The approval number for your protocol is #CUR-121018. Please include this number in the subject line of in all future communications with the IRB regarding the protocol.

Sincerely,

Adam Parker, Ph.D.
Committee Member, Institutional Review Board

Dr. Teresa Davis, SOS Chair | ASU Station #11025 | San Angelo, Texas 76909
Phone 325.486.6121 | Fax: 325.942.2194

BIOGRAPHY

Stephanie Dayle Crank is a graduate student in the Applied Psychology Program. She attended Southern Utah University, and in April 2017, she completed a Bachelor of Science dual degree in Psychology and Criminal Justice. She will graduate August 2019 with a Master of Science in Applied Psychology. She will start her doctoral candidacy for a Ph.D. in Brain and Cognition through Utah State University Fall 2019.